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EXAMINER	
PHILPOTT, JUSTIN M	
ART UNIT	**PAPER NUMBER**
2665	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/883,589	RAPHAELI ET AL.	
	Examiner	Art Unit	
	Justin M. Philpott	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 October 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-99* is/are pending in the application.

4a) Of the above claim(s) *87-92 and 96-99* is/are withdrawn from consideration.

5)☒ Claim(s) *49-59* is/are allowed.

6)☒ Claim(s) *1-41,43-48,60-71,73-86 and 93-95* is/are rejected.

7)☒ Claim(s) *42 and 72* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20011024*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-86 and 93-95, drawn to methods for carrier detection and particularly CSMA, classified in class 370, subclass 445.

II. Claims 87-92, drawn to methods for station recognition and particularly estimating number of stations for channel access, classified in class 370, subclasses 447, 461 and 462.

III. Claims 97-99, drawn to methods for acknowledging communications between stations, classified in class 370, subclasses 350, 449, 454.

2. The inventions are distinct, each from the other because of the following reasons: Each of Groups I, II and III are directed to distinct methods and would require additional searches which would impose an undue burden on Examiner.

3. During a telephone conversation with Howard Zaretsky on September 29, 2005 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-86 and 93-95. Affirmation of this election must be made by applicant in replying to this Office action. Claims 87-92 and 96-99 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

4. Claims 27-48, 68, 82, 86 and 95 are objected to because of the following informalities: "The method according to claim 17" (claim 16, line 1) should be changed to "The method according to claim ~~17~~ 1"; "the step" (claim 27, line 1; claim 28, line 1; claim 29, line 1; and claim 30, line 1) should be changed to "~~the~~ a step"; "a said backoff time slot" (claim 31, line 10) should be changed to "~~a~~ said backoff time slots"; "backup timer" (claim 31, line 12) should be changed to "~~backup~~ backoff timer"; "said CD signal" recited twice in claim 68 should be amended to depend upon claim 65 and recite one of "said CD signal" and one of "said FCS signal" as appropriate; "decreased increased" (claim 82, line 2) should be changed to "decreased ~~increased~~"; "E(t)" (claim 86, line 9) should be changed to "E[t]" to be consistent with line 5 of the claim; and "an ACK reply" (claim 95, line 15) should be changed to "an acknowledgement (ACK) reply". Claims 32-48 are objected to for their dependence on the objected claim 31. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-30, 32-34, 36, 65-67, 80-86 and 93-95 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Specifically, claim 1 recites the unclear language of "a CD time" (claim 1, line 15). Appropriate correction is required (e.g., including a recitation of what "a CD time" is); claims 2-19 depend upon claim 1 and are rejected for the same reason as discussed regarding claim 1.

8. Also, claims 20, 80, 83, 94 and 95 recite the limitation "said medium" (claim 20, line 10; claim 80, line 10; claim 83, line 10; claim 94, line 9; claim 95, line 10), and claims 80, 83 and 93-95 recite the limitation "the particular station" (claim 80, line 9; claim 83, line 9; claim 93, lines 9-10; claim 94, lines 7-8; claim 95, lines 8-9). There is insufficient antecedent basis for this limitation in the claim. Claims 21-30, 81 and 82, and 84-86 depend upon claims 20, 80, and 83, respectively, and are rejected for the same reason as discussed above regarding claims 20, 80 and 83. Also, claim 86 recites the limitation "said number of stations" which lacks antecedent basis; this rejection may be overcome by amending claim 86 to recite "~~said~~ a number of said plurality of stations".

9. Claim 22 recites "said CD signal" in claim 20, which lacks sufficient antecedent basis. Applicant may overcome this rejection by changing claim 22 to be dependent upon claim 21.

10. Further, claim 22 recites indefinite language of "a *relatively* long time" and "a *low* false alarm rate" (emphasis added), and it is unclear as to what applicant intends "a relatively long time" and "a low false alarm rate" to mean.

11. Claims 32 and 65 recite the unclear language of "a CD time". Clarification is required.

12. Claims 33 and 34 recite the limitation "said FCD signal" in claim 31 which lacks antecedent basis. Applicant may overcome this rejection by amending claims 33 and 34 to depend upon claim 32.

13. Claim 36 recites "said transmission session" which lacks antecedent basis. Appropriate correction is required.

14. Claims 66 and 67 recite "said FCD signal" in claim 60 which lacks antecedent basis. Applicant may overcome this rejection by amending claims 66 and 67 to depend upon claim 65.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

16. Claims 20-24, 29-31, 35-37, 40, 41, 47, 48, 60-64, 68-71, 79, 80, 82, 83, 85 and 93 are rejected under 35 U.S.C. 102(a) as being anticipated by U.S. Patent No. 6,078,591 to Kalkunte et al.

Regarding claim 20, Kalkunte teaches a method of accessing a channel in a communication transceiver coupled to a communications channel (e.g., see col. 1, line 15 – col. 11, line 49), the method comprising the steps of: establishing one or more contention windows (e.g., waiting a calculated number of slot times, see col. 6, lines 5-65) upon termination of a current transmission session (e.g., no carrier is sensed), each contention window assigned a priority (e.g., see col. 9, line 49 – col. 10, line 42 regarding collision delay interval comprising high priority data) and subdivided into a plurality of backoff time slots (e.g., collision delay interval or collision backoff interval, see col. 9, line 64 – col. 10, line 35; see also col. 8, line 15 – col. 9, line 21 regarding collision backoff or delay interval set in step 88); deferring zero or

more contention windows (e.g., setting collision backoff interval to zero in step 88, see col. 9, lines 1-7) until arrival of a contention window whose priority corresponds to the priority of a particular transmission (e.g., high priority data, see col. 9, line 25 – col. 10, line 42); initializing a backoff counter with a backoff count equal to a random number of backoff time slots (e.g., counter in accordance with truncated binary exponential backoff (TBEB) algorithm, see col. 5, line 64 – col. 9, line 22); decrementing the backoff counter while a medium is idle (e.g., according to latency timer or decreasing collision backoff, see col. 7, line 40 – col. 8, line 58); and attempting to reserve the channel upon expiration of the backoff counter (e.g., collision mediation according to TBEB algorithm, wherein MAC waits a collision delay interval followed by an IFG and then attempts to reserve the channel by transmitting packets, see col. 8, lines 15-58).

Regarding claim 21, Kalkunte teaches the width of the backoff time slot is on the order of a carrier detect signal (e.g., see col. 5, line 64 – col. 6, line 65 regarding carrier detection and TBEB algorithm).

Regarding claim 22, Kalkunte teaches the CD signal is generated a relatively long time after the start of transmission (e.g., see col. 5, line 64 – col. 6, line 65 regarding carrier detection, wherein a carrier is inherently detected after the start of transmission), has a low false alarm rate (e.g., inherently has some false alarm rate) and indicates that a transmission is starting (e.g., see col. 5, line 64 – col. 6, line 65).

Regarding claim 23, Kalkunte teaches the width of the backoff time slot is on the order or a fast carrier detect signal (e.g., see col. 5, line 64 – col. 6, line 65 regarding carrier detection and TBEB algorithm).

Regarding claim 24, Kalkunte teaches the FCD signal is generated a relatively long time after the start of transmission (e.g., see col. 5, line 64 – col. 6, line 65 regarding carrier detection, wherein a carrier is inherently detected after the start of transmission), has a high false alarm rate (e.g., inherently has some false alarm rate) and indicates that a transmission is starting (e.g., see col. 5, line 64 – col. 6, line 65).

Regarding claim 29, Kalkunte teaches decreasing the size of the contention window up to a minimum contention window size if the channel reservation was successful (e.g., see col. 9, lines 1-7 regarding decreasing collision backoff interval to zero in step 88).

Regarding claim 30, Kalkunte teaches adjusting the size of each contention window as a function of the number of stations in the network (e.g., see col. 7, lines 48-61 regarding determining whether to overcome a capture effect, comprising adjusting contention windows, which is a function of the number of other network nodes according to their packet transfers).

Regarding claim 31, Kalkunte teaches a carrier sense multiple access (CSMA) based communications system wherein transmissions are preceded by a contention phase during which one or more transmitters compete for access to a channel (e.g., see col. 1, line 15 – col. 11, line 49), comprising: means for establishing one or more contention windows (e.g., waiting a calculated number of slot times, see col. 6, lines 5-65), each contention window assigned a priority (e.g., see col. 9, line 49 – col. 10, line 42 regarding collision delay interval comprising high priority data); means for dividing each contention window into a plurality of backoff time slots (e.g., collision delay interval or collision backoff interval, see col. 9, line 64 – col. 10, line 35; see also col. 8, line 15 – col. 9, line 21 regarding collision backoff or delay interval set in step 88) wherein detection of a carrier sense signal during a time slot potentially indicates that the

channel is busy (e.g., see col. 8, lines 37-58); backoff means adapted to count using a backoff timer a randomly selected backoff time equal to a multiple of the backoff time slots (e.g., counter in accordance with truncated binary exponential backoff (TBEB) algorithm, see col. 5, line 64 – col. 9, line 22); and reservation means adapted to attempt reservation of the channel upon expiration of the backoff timer and to enable transmission upon successful reservation of the channel (e.g., collision mediation according to TBEB algorithm, wherein MAC waits a collision delay interval followed by an IFG and then attempts to reserve the channel by transmitting packets, see col. 8, lines 15-58).

Regarding claim 35, Kalkunte teaches wherein the backoff means comprises means for restarting a transmission session upon receipt of a CD signal (e.g., see col. 8, line 16 – col. 9, line 22 regarding transmission of data packet).

Regarding claim 36, Kalkunte teaches the backoff timer is adapted to generate a new random backoff time (e.g., according to TBEB) in response to the transmission session being deferred (e.g., see col. 8, line 16 – col. 9, line 22).

Regarding claim 37, Kalkunte teaches the backoff timer is adapted to continue counting from a point at which the backoff timer was previously stopped upon the transmission session being resumed (e.g., see col. 8, line 16 – col. 9, line 22 regarding latency timer).

Regarding claims 40 and 41, Kalkunte teaches adjusting the size of each contention window as a function of the number of stations in the network using management frames (e.g., see col. 7, lines 48-61 regarding determining whether to overcome a capture effect, comprising adjusting contention windows, which is a function of the number of other network nodes according to their packet transfers).

Regarding claims 47 and 48, Kalkunte teaches decrementing a counter (e.g., latency timer) holding a reservation time for a session and releasing the channel in the event a maximum time (e.g., latency threshold) allocated to a session has expired (e.g., see col. 7, line 48 – col. 8, line 12).

Regarding claim 60, Kalkunte teaches a computer readable storage medium having a computer program embodied thereon for causing a suitably programmed system to access a channel in a carrier sense multiple access (CSMA) frame based communications system wherein frame transmissions are separated by a contention interframe space (CIFS) during which one or more transmitters compete for access to the channel (e.g., see col. 1, line 15 – col. 11, line 49) by performing the following steps when such program is executed on the system: establishing one or more contention windows upon termination of a current transmission session (e.g., waiting a calculated number of slot times, see col. 6, lines 5-65), each contention window assigned a priority (e.g., see col. 9, line 49 – col. 10, line 42 regarding collision delay interval comprising high priority data) and subdivided into a plurality of backoff time slots (e.g., collision delay interval or collision backoff interval, see col. 9, line 64 – col. 10, line 35; see also col. 8, line 15 – col. 9, line 21 regarding collision backoff or delay interval set in step 88); deferring zero or more contention windows (e.g., setting collision backoff interval to zero in step 88, see col. 9, lines 1-7) until arrival of a contention window whose priority corresponds to the priority of a particular transmission (e.g., high priority data, see col. 9, line 25 – col. 10, line 42); initializing a backoff counter with a backoff count equal to a random number of backoff time slots (e.g., counter in accordance with truncated binary exponential backoff (TBEB) algorithm, see col. 5, line 64 – col. 9, line 22); decrementing the backoff counter while a medium is idle (e.g.,

according to latency timer or decreasing collision backoff, see col. 7, line 40 – col. 8, line 58); attempting to reserve the channel upon expiration of the backoff counter (e.g., collision mediation according to TBEB algorithm, wherein MAC waits a collision delay interval followed by an IFG and then attempts to reserve the channel by transmitting packets, see col. 8, lines 15-58); and transmitting onto the channel upon successful reservation of the channel (e.g., see col. 8, lines 15-58).

Regarding claim 61, Kalkunte teaches the width of the backoff time slot is on the order of a carrier detect signal (e.g., see col. 5, line 64 – col. 6, line 65 regarding carrier detection and TBEB algorithm).

Regarding claim 62, Kalkunte teaches the CD signal is generated a relatively long time after the start of transmission (e.g., see col. 5, line 64 – col. 6, line 65 regarding carrier detection, wherein a carrier is inherently detected after the start of transmission), has a low false alarm rate (e.g., inherently has some false alarm rate) and indicates that a transmission is starting (e.g., see col. 5, line 64 – col. 6, line 65).

Regarding claim 63, Kalkunte teaches the width of the backoff time slot is on the order or a fast carrier detect signal (e.g., see col. 5, line 64 – col. 6, line 65 regarding carrier detection and TBEB algorithm).

Regarding claim 64, Kalkunte teaches the FCD signal is generated a relatively long time after the start of transmission (e.g., see col. 5, line 64 – col. 6, line 65 regarding carrier detection, wherein a carrier is inherently detected after the start of transmission), has a high false alarm rate (e.g., inherently has some false alarm rate) and indicates that a transmission is starting (e.g., see col. 5, line 64 – col. 6, line 65).

Regarding claim 68, Kalkunte inherently teaches a CD signal has a particular probability of detection (e.g., according to TBEB, see col. 8, lines 16-67).

Regarding claim 69, Kalkunte teaches wherein the backoff means comprises means for restarting a transmission session upon receipt of a CD signal (e.g., see col. 8, line 16 – col. 9, line 22 regarding transmission of data packet).

Regarding claims 70 and 71, Kalkunte teaches adjusting the size of each contention window as a function of the number of stations in the network using management frames (e.g., see col. 7, lines 48-61 regarding determining whether to overcome a capture effect, comprising adjusting contention windows, which is a function of the number of other network nodes according to their packet transfers).

Regarding claim 79, Kalkunte teaches decrementing a counter (e.g., latency timer) holding a reservation time for a session and releasing the channel in the event a maximum time (e.g., latency threshold) allocated to a session has expired (e.g., see col. 7, line 48 – col. 8, line 12).

Regarding claim 80, Kalkunte teaches a method of accessing a communications channel in a network including a plurality of stations (e.g., see col. 1, line 15 – col. 11, line 49), the method comprising the steps of: establishing one or more contention windows in which a plurality of stations compete for access on the communications channel (e.g., waiting a calculated number of slot times, see col. 6, lines 5-65); assigning a different priority to each of the one or more contention windows (e.g., see col. 9, line 49 – col. 10, line 42 regarding collision delay interval comprising high priority data); initializing a backoff counter (e.g., counter in accordance with truncated binary exponential backoff (TBEB) algorithm, see col. 5, line 64 –

col. 9, line 22) with a backoff count equal to a random number of backoff time slots (e.g., collision delay interval or collision backoff interval, see col. 9, line 64 – col. 10, line 35; see also col. 8, line 15 – col. 9, line 21 regarding collision backoff or delay interval set in step 88); waiting until the arrival of a contention window whose priority corresponding to the priority of transmission of a particular station (e.g., high priority data, see col. 9, line 25 – col. 10, line 42) and upon the arrival thereof decrementing the backoff counter while a medium is idle (e.g., according to latency timer or decreasing collision backoff, see col. 7, line 40 – col. 8, line 58); and attempting to reserve the communications channel upon expiration of the backoff counter (e.g., collision mediation according to TBEB algorithm, wherein MAC waits a collision delay interval followed by an IFG and then attempts to reserve the channel by transmitting packets, see col. 8, lines 15-58).

Regarding claim 82, Kalkunte teaches the size of the contention window is decreased upon the successful reservation of the communications channel by a station (e.g., see col. 9, lines 1-7 regarding decreasing collision backoff interval to zero in step 88).

Regarding claim 83, Kalkunte teaches a method of accessing a communications channel in a network including a plurality of stations (e.g., see col. 1, line 15 – col. 11, line 49), the method comprising the steps of: establishing one or more contention windows in which a plurality of stations compete for access on the communications channel (e.g., waiting a calculated number of slot times, see col. 6, lines 5-65); assigning a priority to each of the one or more contention windows (e.g., see col. 9, line 49 – col. 10, line 42 regarding collision delay interval comprising high priority data); initializing a backoff counter (e.g., counter in accordance with truncated binary exponential backoff (TBEB) algorithm, see col. 5, line 64 – col. 9, line 22)

with a backoff count equal to a random number of backoff time slots (e.g., collision delay interval or collision backoff interval, see col. 9, line 64 – col. 10, line 35; see also col. 8, line 15 – col. 9, line 21 regarding collision backoff or delay interval set in step 88); waiting until the arrival of a contention window whose priority corresponding to the priority of transmission of a particular station (e.g., high priority data, see col. 9, line 25 – col. 10, line 42) and upon the arrival thereof decrementing the backoff counter while a medium is idle (e.g., according to latency timer or decreasing collision backoff, see col. 7, line 40 – col. 8, line 58); attempting to reserve the communications channel upon expiration of the backoff counter (e.g., collision mediation according to TBEB algorithm, wherein MAC waits a collision delay interval followed by an IFG and then attempts to reserve the channel by transmitting packets, see col. 8, lines 15-58); and adjusting the size of a contention window as a function of the number of stations contending for the communications channel in the contention window (e.g., see col. 6, lines 41-52 regarding basing the time slot interval upon a range of integers calculated from an exponential number of access attempts, representative of the number of stations contending for access).

Regarding claim 85, Kalkunte teaches the size of the contention window is decreased upon the successful reservation of the communications channel by a station (e.g., see col. 9, lines 1-7 regarding decreasing collision backoff interval to zero in step 88).

Regarding claim 93, Kalkunte teaches a method of accessing a communications channel in a power line carrier based network including a plurality of stations (e.g., see col. 1, line 15 – col. 11, line 49), the method comprising the steps of: establishing one or more contention windows in which a plurality of stations compete for access on the communications channel (e.g., waiting a calculated number of slot times, see col. 6, lines 5-65); assigning a different

priority to each of the one or more contention windows (e.g., see col. 9, line 49 – col. 10, line 42 regarding collision delay interval comprising high priority data); each station sensing the communication channel for the presence of carrier signal (e.g., see col. 6, lines 5-40 regarding carrier detect); each station wishing to transmit, selecting a random backoff time (e.g., in accordance with truncated binary exponential backoff (TBEB) algorithm, see col. 5, line 64 – col. 9, line 22); each station waiting until the arrival of a contention window having a priority associated therewith corresponding to the priority of transmission of the particular station (e.g., see col. 9, line 49 – col. 10, line 42); within the contention window having matching priority (e.g., see high priority data, col. 9, line 25 – col. 10, line 42), waiting random backoff time (e.g., collision delay interval or collision backoff interval, see col. 9, line 64 – col. 10, line 35; see also col. 8, line 15 – col. 9, line 21 regarding collision backoff or delay interval set in step 88); upon the expiration of the backoff time, attempting to reserve the communications channel (e.g., collision mediation according to TBEB algorithm, wherein MAC waits a collision delay interval followed by an IFG and then attempts to reserve the channel by transmitting packets, see col. 8, lines 15-58); and suspending countdown of the backoff time if presence of carrier signal is detected (e.g., see col. 6, lines 33-65).

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

18. Claims 26-28, 38, 39, 43-46, 73-78, 81, 84, 94 and 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalkunte in view of U.S. Patent No. 6,625,162 to Myojo et al.

Regarding claims 26, 73 and 74, Kalkunte teaches the method discussed above regarding claims 20 and 60, however, may not specifically disclose sending a request to send (RTS) or clear to send (CTS). Myojo, like Kalkunte, also teaches methods using CSMA, and specifically, teaches attempting to reserve a channel comprises sending a request to send (RTS) frame incorporating a reservation time to a destination station and sending a clear to send (CTS) frame incorporating a reservation time from the destination station to the source station (e.g., see col. 5, line 51 – col. 13, line 39 regarding RTS and CTS). Further, the CSMA teachings of Myojo provide a CSMA method with decreased probability of collision and increased overall throughput (e.g., see col. 14, lines 7-11). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the CSMA teachings of Myojo to the CSMA method of Kalkunte in order to provide a CSMA method with decreased probability of collision and increased overall throughput.

Regarding claims 27, 28, 75, 81 and 84, Kalkunte teaches the method discussed above regarding claims 20, 60, 80 and 83, however, may not specifically disclose declaring a link failure. Myojo, like Kalkunte, also teaches methods using CSMA, and specifically, teaches declaring a link failure (e.g., the existence of a hidden terminal) after attempting to reserve a channel a predetermined number of times (e.g., see col. 5, lines 28-46 regarding recognizing a hidden terminal, implicitly after a number of failed attempts), and in accordance therewith, increasing the width of a backoff time slot and repeating initialization (e.g., increasing backoff time slot from 201 to 202 in FIG. 4, see also col. 5, lines 47-50 and col. 9, line 25 – col. 13, line

64 regarding wait time selection). Further, as discussed above, the CSMA teachings of Myojo provide a CSMA method with decreased probability of collision and increased overall throughput (e.g., see col. 14, lines 7-11). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the CSMA teachings of Myojo to the CSMA method of Kalkunte in order to provide a CSMA method with decreased probability of collision and increased overall throughput.

Regarding claims 38 and 39, Kalkunte teaches the method discussed above regarding claim 31, however, may not specifically disclose sending an RTS. Myojo, like Kalkunte, also teaches methods using CSMA, and specifically, teaches reservation means is adapted to send a request to send (RTS) and/or clear to send (CTS) frame incorporating a reservation time to a destination station (e.g., see col. 5, line 51 – col. 13, line 39 regarding RTS and CTS). Further, the CSMA teachings of Myojo provide a CSMA method with decreased probability of collision and increased overall throughput (e.g., see col. 14, lines 7-11). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the CSMA teachings of Myojo to the CSMA method of Kalkunte in order to provide a CSMA method with decreased probability of collision and increased overall throughput.

Regarding claims 43-46, 76-78, Kalkunte teaches the method discussed above regarding claims 20 and 60, however, may not specifically disclose releasing a channel once reserved in the event of a link failure. Myojo, like Kalkunte, also teaches methods using CSMA, and specifically, teaches releasing a channel once reserved in the event of a failure (e.g., see col. 5, lines 28-46 regarding recognizing a hidden terminal, implicitly after a number of failed attempts) or expiration of maximum time allocated to a session (e.g., see col. 3, line 45 – col. 13, line 12

regarding wait time). Also, Myojo teaches communicating via CTS, RTS and ACK (e.g., see col. 5, line 13 – col. 6, line 43). While Myojo may not specifically disclose these signals each communicate failure, at the time of the invention it would have been obvious to one of ordinary skill in the art to communicate the link failures with the already utilized CTS, RTS and/or ACK since Myojo clearly teaches communicating via CTS, RTS and ACK (e.g., see col. 5, line 13 – col. 6, line 43) and also clearly teaches variations may be implemented for such communications (e.g., see col. 13, lines 40-64). Further, as discussed above, the CSMA teachings of Myojo provide a CSMA method with decreased probability of collision and increased overall throughput (e.g., see col. 14, lines 7-11). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the CSMA teachings of Myojo to the CSMA method of Kalkunte in order to provide a CSMA method with decreased probability of collision and increased overall throughput.

Regarding claim 94, Kalkunte teaches a method of accessing a communications channel in a network including a plurality of stations (e.g., see col. 1, line 15 – col. 11, line 49), the method comprising the steps of: establishing one or more contention windows in which a plurality of stations compete for access on the communications channel (e.g., waiting a calculated number of slot times, see col. 6, lines 5-65); initializing a backoff counter with a backoff count equal to a random number of backoff time slots (e.g., counter in accordance with truncated binary exponential backoff (TBEB) algorithm, see col. 5, line 64 – col. 9, line 22); waiting until the arrival of a contention window having a priority associated therewith (e.g., high priority data, see col. 9, line 25 – col. 10, line 42) corresponding to the priority of transmission of the particular station (e.g., see col. 9, line 49 – col. 10, line 42) and upon the arrival thereof

decrementing the backoff counter while a medium is idle (e.g., according to latency timer or decreasing collision backoff, see col. 7, line 40 – col. 8, line 58); and waiting and attempting to reserve the communications channel (e.g., collision mediation according to TBEB algorithm, wherein MAC waits a collision delay interval followed by an IFG and then attempts to reserve the channel by transmitting packets, see col. 8, lines 15-58).

However, Kalkunte may not specifically disclose declaring the existence of a hidden terminal or increasing the width of the backoff time slot before repeating initializing steps.

Myojo, like Kalkunte, also teaches methods using CSMA, and specifically, teaches declaring the existence of a hidden terminal after a predetermined number of failed attempts to reserve a communications channel (e.g., see col. 5, lines 28-46 regarding recognizing a hidden terminal, implicitly after a number of failed attempts), and in accordance therewith, increasing the width of a backoff time slot and repeating initialization (e.g., increasing backoff time slot from 201 to 202 in FIG. 4, see also col. 5, lines 47-50 and col. 9, line 25 – col. 13, line 64 regarding wait time selection). Further, as discussed above, the CSMA teachings of Myojo provide a CSMA method with decreased probability of collision and increased overall throughput (e.g., see col. 14, lines 7-11). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the CSMA teachings of Myojo to the CSMA method of Kalkunte in order to provide a CSMA method with decreased probability of collision and increased overall throughput.

Regarding claim 95, Kalkunte teaches a method of accessing a communications channel in a network including a plurality of stations (e.g., see col. 1, line 15 – col. 11, line 49), the method comprising the steps of: segmenting a transmission session into a plurality of frames

(e.g., see col. 4, line 43 – col. 11, line 63 regarding transmission); establishing one or more contention windows in which a plurality of stations compete for access on the communications channel (e.g., waiting a calculated number of slot times, see col. 6, lines 5-65); initializing a backoff counter with a backoff count equal to a random number of backoff time slots (e.g., counter in accordance with truncated binary exponential backoff (TBEB) algorithm, see col. 5, line 64 – col. 9, line 22); waiting until the arrival of a contention window corresponding to a particular transmission (e.g., see col. 9, line 49 – col. 10, line 42) and upon the arrival thereof decrementing the backoff counter while a medium is idle (e.g., according to latency timer or decreasing collision backoff, see col. 7, line 40 – col. 8, line 58); attempting to reserve the communications channel upon expiration of the backoff counter for a duration sufficient to transmit the plurality of frame and transmitting them from a transmitting station to a receiving station (e.g., collision mediation according to TBEB algorithm, wherein MAC waits a collision delay interval followed by an IFG and then attempts to reserve the channel by transmitting, see col. 8, lines 15-58).

However, Kalkunte may not specifically disclose a receiving station transmits an ACK reply with bits indicating whether frames should be retransmitted.

Myojo, as discussed above, like Kalkunte, also teaches a CSMA method. Specifically Myojo also teaches a receiving station transmits an ACK reply (e.g., ACK signal, see col. 4, lines 24-31) to a transmitting station containing a plurality of ACK bits (e.g., ACK signal implicitly comprising ACK bits), each ACK bit indicating whether one of the frames is to be retransmitted (e.g., see col. 4, line 24 – col. 13, line 39 regarding ACK signals, wherein it is implicit that receipt of an ACK corresponding to particular data transmitted indicates that the data is not to be

retransmitted). Further, as discussed above, the CSMA teachings of Myojo provide a CSMA method with decreased probability of collision and increased overall throughput (e.g., see col. 14, lines 7-11). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the CSMA teachings of Myojo to the CSMA method of Kalkunte in order to provide a CSMA method with decreased probability of collision and increased overall throughput.

Allowable Subject Matter

19. Claims 49-59 are allowed.

20. Claims 1-19 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

21. Claims 25, 42 and 72 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

22. Claims 32-34, 65-67 and 86 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

23. The following is a statement of reasons for the indication of allowable subject matter: claims 1, 25, 32, 49 and 65 each recite methods comprising novel combinations of both carrier detect signaling and fast carrier detect signaling, the particular combinations of which were not found in a search of related prior art; and claim 42, 72 and 86 each recite methods for estimating a number of stations based upon contention window and transmission times which, in

combination with the limitations of the claims these claims depend upon, were not found in a search of related prior art. Claims 2-19, 33, 34, 50-59, 66, 67 depend upon one of the above-mentioned claims comprising allowable subject matter, and thus, comprise allowable subject matter for the same reasons discussed above.

Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Nos. 5,164,942 and 5,369,639 to Kamerman et al., and U.S. Patent No. 5,175,537 to Jaffe et al. disclose methods for CSMA/CD.

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin M. Philpott whose telephone number is 571.272.3162. The examiner can normally be reached on M-F, 9:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy D. Vu can be reached on 571.272.3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Justin M Philpott

ALPUS H. HSU
PRIMARY EXAMINER